

What is claimed is:

1. A rotary shaft hermetic sealing device for providing dynamically hermetic sealing for a rotary shaft and to fully transfer the torque under various rpm's comprising:

means for holding a coupler drive bearing to provide rotational freedom to a coupler drive shaft of a center shaft coupler;

means for holding a coupler load bearing to provide rotational freedom to a coupler load shaft of a center shaft coupler;

means for transmitting motion between a drive crank shaft and a center shaft coupler;

means for transmitting motion between a center shaft coupler and a load crank shaft;

means for holding rubber seals to provide hermetic sealing, rigidly connected to said means for transmitting motion between a center shaft coupler and a load crank shaft, and rigidly connected to said means for transmitting motion between a drive crank shaft and a center shaft coupler;

means for providing a solid, common base for a

drive crank shaft and a load crank shaft;

means for sealing a drive crank shaft from fluid leakage, sealingly mounted to said means for holding rubber seals to provide hermetic sealing;

means for sealing a load crank shaft from fluid leakage, sealingly mounted to said means for holding rubber seals to provide hermetic sealing;

means for providing solid support base for a drive crank shaft during operation, sealingly mounted to said means for sealing a drive crank shaft from fluid leakage;

means for providing solid support base for a load crank shaft during operation, sealingly mounted to said means for sealing a load crank shaft from fluid leakage;

means for providing rotational innertia balance due to a eccentric bore on a drive crank shaft, adjustably mounted to said means for holding a coupler drive bearing to provide rotational freedom to a coupler drive shaft of a center shaft coupler;

means for providing rotational innertia balance due to a eccentric bore on a load crank shaft,

adjustably mounted to said means for holding a coupler load bearing to provide rotational freedom to a coupler load shaft of a center shaft coupler;

means for adjusting the total balance weight to reduce vibration, removably mounted to said means for providing rotational innertia balance due to a eccentric bore on a drive crank shaft; and

means for adjusting the total balance weight to reduce vibration, removably mounted to said means for providing rotational innertia balance due to a eccentric bore on a load crank shaft.

2. The rotary shaft hermetic sealing device in accordance with claim 1, wherein said means for holding a coupler drive bearing to provide rotational freedom to a coupler drive shaft of a center shaft coupler comprises a drive crank shaft, having high stiffness.

3. The rotary shaft hermetic sealing device in accordance with claim 1, wherein said means for holding a coupler load

bearing to provide rotational freedom to a coupler load shaft of a center shaft coupler comprises a load crank shaft, having high stiffness.

4. The rotary shaft hermetic sealing device in accordance with claim 1, wherein said means for transmitting motion between a drive crank shaft and a center shaft coupler comprises a solid coupler drive shaft, having high bending modulus and high stiffness.

5. The rotary shaft hermetic sealing device in accordance with claim 1, wherein said means for transmitting motion between a center shaft coupler and a load crank shaft comprises a solid coupler load shaft, having high bending modulus and high stiffness.

6. The rotary shaft hermetic sealing device in accordance with claim 1, wherein said means for holding rubber seals to provide hermetic sealing comprises a rigid coupler

sealing disk.

7. The rotary shaft hermetic sealing device in accordance with claim 1, wherein said means for providing a solid, common base for a drive crank shaft and a load crank shaft comprises a rigid housing.

8. The rotary shaft hermetic sealing device in accordance with claim 1, wherein said means for sealing a drive crank shaft from fluid leakage. comprises a drive rubber seal, being deformable.

9. The rotary shaft hermetic sealing device in accordance with claim 1, wherein said means for sealing a load crank shaft from fluid leakage. comprises a load rubber seal, being deformable.

10. The rotary shaft hermetic sealing device in accordance

with claim 1, wherein said means for providing solid support base for a drive crank shaft during operation comprises a drive shaft support, having a center bore to hold a drive shaft support bearing.

11. The rotary shaft hermetic sealing device in accordance with claim 1, wherein said means for providing solid support base for a load crank shaft during operation comprises a load shaft support, having a center bore to hold a load shaft support bearing.

12. The rotary shaft hermetic sealing device in accordance with claim 1, wherein said means for providing rotational innertia balance due to a eccentric bore on a drive crank shaft. comprises a drive balance base.

13. The rotary shaft hermetic sealing device in accordance with claim 1, wherein said means for providing rotational innertia balance due to a eccentric bore on a load crank

shaft. comprises a load balance base.

14. The rotary shaft hermetic sealing device in accordance with claim 1, wherein said means for adjusting the total balance weight to reduce vibration. comprises a drive balance adjust weight.

15. The rotary shaft hermetic sealing device in accordance with claim 1, wherein said means for adjusting the total balance weight to reduce vibration. comprises a load balance adjust weight.

16. A rotary shaft hermetic sealing device for providing dynamically hermetic sealing for a rotary shaft and to fully transfer the torque under various rpm's comprising:

a drive crank shaft, having high stiffness, for holding a coupler drive bearing to provide rotational freedom to a coupler drive shaft of a center shaft coupler;

a load crank shaft, having high stiffness, for holding a coupler load bearing to provide rotational freedom to a coupler load shaft of a center shaft coupler;

a solid coupler drive shaft, having high bending modulus and high stiffness, for transmitting motion between a drive crank shaft and a center shaft coupler;

a solid coupler load shaft, having high bending modulus and high stiffness, for transmitting motion between a center shaft coupler and a load crank shaft;

a rigid coupler sealing disk, for holding rubber seals to provide hermetic sealing, rigidly connected to said coupler load shaft, and rigidly connected to said coupler drive shaft;

a rigid housing, for providing a solid, common base for a drive crank shaft and a load crank shaft;

a drive rubber seal, being deformable, for sealing a drive crank shaft from fluid leakage, sealingly mounted to said coupler sealing disk;

a load rubber seal, being deformable, for sealing a load crank shaft from fluid leakage,



sealingly mounted to said coupler sealing disk;

a drive shaft support, having a center bore to hold a drive shaft support bearing, for providing solid support base for a drive crank shaft during operation, sealingly mounted to said drive rubber seal;

a load shaft support, having a center bore to hold a load shaft support bearing, for providing solid support base for a load crank shaft during operation, sealingly mounted to said load rubber seal;

a drive balance base, for providing rotational innertia balance due to a eccentric bore on a drive crank shaft, adjustably mounted to said drive crank shaft;

a load balance base, for providing rotational innertia balance due to a eccentric bore on a load crank shaft, adjustably mounted to said load crank shaft;

a drive balance adjust weight, for adjusting the total balance weight to reduce vibration, removably mounted to said drive balance base; and

a load balance adjust weight, for adjusting the

total balance weight to reduce vibration, removably mounted to said load balance base.

17. The rotary shaft hermetic sealing device as recited in claim 16, further comprising:

a left housing cover, for connecting the housing and a drive shaft support to form a common solid base for the device.

18. The rotary shaft hermetic sealing device as recited in claim 16, further comprising:

a right housing cover, for connecting the housing and a load shaft support to form a common solid base for the device.

19. The rotary shaft hermetic sealing device as recited in claim 16, further comprising:

a sensor, for detecting leaking fluid, removably mounted to said housing.

20. A rotary shaft hermetic sealing device for providing dynamically hermetic sealing for a rotary shaft and to fully transfer the torque under various rpm's comprising:

a solid drive crank shaft, having high bending modulus and high stiffness and a large end having an eccentric bore, for holding a coupler drive bearing to provide rotational freedom to a coupler drive shaft of a center shaft coupler;

a solid load crank shaft, having high bending modulus and high stiffness and a large end having an eccentric bore, for holding a coupler load bearing to provide rotational freedom to a coupler load shaft of a center shaft coupler;

a solid coupler drive shaft, having high bending modulus and high stiffness, for transmitting motion between a drive crank shaft and a center shaft coupler;

a solid coupler load shaft, having high bending modulus and high stiffness, for transmitting motion between a center shaft coupler and a load crank shaft;

a rigid coupler sealing disk, having high bending modulus and high stiffness and a flat surface on both sides and mounting screw holes on both sides, for holding rubber seals to provide hermetic sealing, rigidly connected to said coupler load shaft, and rigidly connected to said coupler drive shaft;

a rigid housing, having a flat edge and tapped screw holes and a sensor mounting hole, for providing a solid, common base for a drive crank shaft and a load crank shaft;

an elastic drive rubber seal, being fabric reinforced and deformable and having a flexible metal wire coat, for sealing a drive crank shaft from fluid leakage, sealingly mounted to said coupler sealing disk;

an elastic load rubber seal, being fabric reinforced and deformable and having a flexible metal wire coat, for sealing a load crank shaft from fluid leakage, sealingly mounted to said coupler sealing disk;

a solid drive shaft support, having a center bore to hold a drive shaft support bearing and

mounting screw holes and a flat surface, for providing solid support base for a drive crank shaft during operation, sealingly mounted to said drive rubber seal;

a solid load shaft support, having a center bore to hold a load shaft support bearing and mounting screw holes and a flat surface, for providing solid support base for a load crank shaft during operation, sealingly mounted to said load rubber seal;

a drive balance base, being removeable and adjustable, for providing rotational innertia balance due to a eccentric bore on a drive crank shaft, adjustably mounted to said drive crank shaft;

a load balance base, being removeable and adjustable, for providing rotational innertia balance due to a eccentric bore on a load crank shaft, adjustably mounted to said load crank shaft;

a drive balance adjust weight, being removeable and adjustable and having high density, for adjusting the total balance weight to reduce vibration, removably mounted to said drive balance base;

a load balance adjust weight, being removeable

and adjustable and having high density, for adjusting the total balance weight to reduce vibration, removably mounted to said load balance base;

a rigid left housing cover, being removeable and having a flat surface and mounting screw holes, for connecting the housing and a drive shaft support to form a common solid base for the device;

a rigid right housing cover, being removeable and having a flat surface and mounting screw holes, for connecting the housing and a load shaft support to form a common solid base for the device; and

a sensor, being detachable, for detecting leaking fluid, removably mounted to said housing.